UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/823,988	04/14/2004	Russell E. Miller	5961-00600	4993

35690 7590 09/05/2006

MEYERTONS, HOOD, KIVLIN, KOWERT & GOETZEL, P.C.
700 LAVACA, SUITE 800
AUSTIN, TX 78701

EXAMINER	
TWEEL JR, JOHN ALEXANDER	

ART UNIT	PAPER NUMBER
2612	

DATE MAILED: 09/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/823,988	MILLER ET AL.	
	Examiner	Art Unit	
	John A. Tweel, Jr.	2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-96* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-96* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3/11/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-10, 20, 35-37, and 41-49 are rejected under 35 U.S.C. 102(e) as being anticipated by **Hennings et al** [U.S. 6,778,906].

For claim 1, the method for detecting and reporting an in-flight alert condition of an aircraft taught by **Hennings** includes the following claimed steps, as noted, 1) the claimed monitoring one or more flight characteristics is achieved using the Active Network Guidance and Emergency Logic (ANGEL) that interacts with the aircraft and collects and returns data continuously (Col. 4, Lns. 27-34), 2) the claimed comparing the flight characteristics to one or more normal flight characteristics is also achieved by ANGEL (Col. 4, Lns. 55-61) wherein the data is compared to acceptable limits to determine whether flight conditions are within normal ranges, and 3) the claimed reporting the condition of the aircraft is achieved using the displays on the aircraft or audible alerts in the sound system (Col. 4, Lns. 44-48).

For claim 2, the Hennings reference establishes a number of alert levels (Normal, Moderate, Severe) based on the flight characteristics.

For claim 3, the alert condition of Hennings can be changed between alert levels depending upon threat level.

For claim 4, the Hennings reference uses several on-board systems to alert the pilot of an abnormal flight characteristic.

For claim 5, the alert condition may be increased to a more severe level (Moderate to Severe, '1' to '2') if the flight characteristic deviate from a predetermined value.

For claim 6, the alert condition may be increased to a predetermined threat level when the characteristics deviate from a predetermined value.

For claim 7, the Hennings reference details specific conditions that trigger the preselected threat levels when normal flight characteristics have been deviated from.

For claim 8, the Hennings reference details at least two levels (Moderate, Severe) that the alert condition may achieve depending upon the level of deviation from normal flight characteristics.

For claims 9 and 10, the alert conditions may be provided to the pilot on a display, either on the console or in a helmet-mounted display.

For claim 20, the Hennings reference (Col. 6, Lns. 7-11) states that the parameters and definitions can be adjusted and/or updated according to the requirements of the mission, the vehicle, or the controller.

For claim 35, the method for detecting and reporting a state of an aircraft taught by **Hennings** includes the following claimed steps, as noted, 1) the claimed monitoring one or more flight characteristics as well as 2) assessing a dynamic state of the aircraft is achieved using the Active Network Guidance and Emergency Logic (ANGEL) that interacts with the aircraft and collects and returns data continuously (Col. 4, Lns. 27-34), 3) the claimed comparing the flight characteristics to one or more normal flight characteristics is also achieved by ANGEL (Col. 4, Lns. 55-61) wherein the data is compared to acceptable limits to determine whether flight conditions are within normal ranges, and 4) the claimed modifying one or more boundary conditions is read on the specification (Col. 6, Lns. 7-11) that states the parameters and definitions can be adjusted and/or updated according to the requirements of the mission, the vehicle, or the controller.

For claim 36, the system of Hennings compares flight characteristics to set normal states of the aircraft.

For claim 37, the Hennings reference (Col. 6, Lns. 7-11) states that the parameters and definitions can be adjusted and/or updated according to the requirements of the mission, the vehicle, or the controller.

For claims 41-43, the Hennings references reports the comparison to the pilot using a host of displays, whether it is the multi-function display or helmet-mounted display.

For claim 44, the alert condition of Hennings can be changed between alert levels depending upon threat level.

For claim 45, the alert condition may be increased to a predetermined threat level when the characteristics deviate from a predetermined value.

For claim 46, the pilot of the aircraft is alerted to the condition using both audio and visual alerts.

For claim 47, many different caution lights and audible words are used to provide alarm means.

For claim 48, the Hennings reference uses several on-board systems to alert the pilot of an abnormal flight characteristic.

For claim 49, the Hennings reference (Col. 6, Lns. 7-11) states that the parameters and definitions can be adjusted and/or updated according to the requirements of the mission, the vehicle, or the controller.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 11-13, 38, and 74-76 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hennings et al** in view of **Woodell et al** [U.S. 6,208,284].

For claim 11, the method taught by Hennings includes the claimed steps as noted in the rejection of claim 1 above. However, there is no mention of defining a proximity alert volume around an aircraft.

Alert volumes around aircraft are not new in aircraft alert systems. The reference taught by Woodell presents a Traffic Alert and Collision Avoidance System (TCAS) that has been improved using a radar system. In discussion of the flowchart, a target aircraft is tracked and an advisory is provided according to predetermined criteria. For example, if the equipped aircraft with its given volume (Col. 3, Lns. 44-54) or the target aircraft with its given volume approach each other, an advisory depending upon distance is given. The obvious advantage of this system is that is improves the existing TCAS system and provides resolution advisories in both the vertical and horizontal directions for avoiding aircraft.

Both reference promote the safety of a pilot and crew under potentially life-threatening situations. Any improvement in the systems would be most welcome. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a definition of a proximity alert volume for the purpose of improving the alert system of Hennings in vertical and horizontal directions from intruding aircraft.

For claim 12, an advisory is provided to the pilot if another aircraft enters the alert volume.

For claim 13, the Hennings reference (Col. 6, Lns. 7-11) states that the parameters and definitions can be adjusted and/or updated according to the requirements of the mission, the vehicle, or the controller.

For claim 38, the method taught by Hennings includes the claimed steps as noted in the rejection of claim 35 above. However, there is no mention of defining a proximity alert.

The claim is interpreted and rejected for the same reasons and rationale as is mentioned in the rejection of claim 11 above.

For claim 74, the method taught by Hennings includes the claimed steps as noted in the rejection of claim 64 that follows. However, there is no mention of defining a proximity alert volume around an aircraft.

The claim is interpreted and rejected for the same reasons and rationale as is mentioned in the rejection of claim 11 above.

For claim 75, an advisory is provided to the pilot if another aircraft enters the alert volume.

For claim 76, the Hennings reference (Col. 6, Lns. 7-11) states that the parameters and definitions can be adjusted and/or updated according to the requirements of the mission, the vehicle, or the controller.

5. Claims 14-19, 39, 40, and 77-82 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hennings et al** in view of **Bird et al** [U.S. 6,675,095].

For claim 14, the method taught by Hennings includes the claimed subject matter as discussed in the rejection of claim 1 above. However, there is no mention of defining a boundary of an area.

On-board apparatus for detecting restricted areas is not new in aircraft safety. The apparatus for avoiding air space taught by Bird alerts pilots when they are approaching or entering nonregulatory special use airspace where pilot training and

unusual types of aerial activity may occur. The obvious advantage of this system is to prevent possible collisions or accidents with other aircraft.

As any improvement in aircraft safety would be welcomed, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include defining a boundary of an area for the purpose of insuring the safety of the aircraft and its crew.

For claim 15, the Bird reference provides an alert if the aircraft crosses into the restricted area.

For claim 16, the Hennings reference (Col. 6, Lns. 7-11) states that the parameters and definitions can be adjusted and/or updated according to the requirements of the mission, the vehicle, or the controller.

For claim 17, the method taught by Hennings includes the claimed subject matter as discussed in the rejection of claim 1 above. However, there is no mention of defining an exclusive area around the aircraft.

The claim is interpreted and rejected for the same reasons and rationale as is mentioned in the rejection of claim 14 above.

For claim 18, the Bird reference provides an alert if the aircraft crosses into the restricted area.

For claim 19, the Hennings reference (Col. 6, Lns. 7-11) states that the parameters and definitions can be adjusted and/or updated according to the requirements of the mission, the vehicle, or the controller.

For claim 39, the method taught by Hennings includes the claimed subject matter as discussed in the rejection of claim 35 above. However, there is no mention of a boundary alert.

The claim is interpreted and rejected for the same reasons and rationale as is mentioned in the rejection of claim 14 above.

For claim 40, the method taught by Hennings includes the claimed subject matter as discussed in the rejection of claim 35 above. However, there is no mention of an exclusive area alert.

The claim is interpreted and rejected for the same reasons and rationale as is mentioned in the rejection of claim 14 above.

For claim 77, the method taught by Hennings includes the claimed subject matter as discussed in the rejection of claim 64 that follows. However, there is no mention of defining a boundary of an area.

The claim is interpreted and rejected for the same reasons and rationale as is mentioned in the rejection of claim 14 above.

For claim 78, the Bird reference provides an alert if the aircraft crosses into the restricted area.

For claim 79, the Hennings reference (Col. 6, Lns. 7-11) states that the parameters and definitions can be adjusted and/or updated according to the requirements of the mission, the vehicle, or the controller.

For claim 80, the method taught by Hennings includes the claimed subject matter as discussed in the rejection of claim 64 that follows. However, there is no mention of defining an exclusive area around the aircraft.

The claim is interpreted and rejected for the same reasons and rationale as is mentioned in the rejection of claim 14 above.

For claim 81, the Bird reference provides an alert if the aircraft crosses into the restricted area.

For claim 82, the Hennings reference (Col. 6, Lns. 7-11) states that the parameters and definitions can be adjusted and/or updated according to the requirements of the mission, the vehicle, or the controller.

6. Claims 21-34, 50-73, and 83-96 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Hennings et al**.

For claims 21-25, the Hennings reference teaches the claimed subject matter as discussed in the rejection of claim 1 above. However, there is no mention of modifying one of the flight characteristics based on flight phase of the aircraft.

The reference does; however, state that the data is gathered and compared continuously during the operation of the aircraft, presumably during all flight phases of said aircraft. The reference also, as noted above, state that the parameters and definitions determining threat levels can be adjusted or updated according to the requirements of the mission or vehicle. As different phases of flight require different

parameters and definitions, it would be obvious that a flight characteristic be modified according to the phase of flight. This is considered an obvious variation on the prior art.

For claims 26-34, the vehicle subsystems that the ANGEL may interact with include digital devices, analog devices, memory devices and sources located in the mission computer as well as GPS, navigation systems, radar altimeter, flight data recorder, flight controls and moving maps. As this cuts a wide swath through many different aeronautical parameters, the claimed flight characteristics such as horizontal and vertical velocity, heading change, altitude and speed change are considered well within the mentioned subsystems.

For claims 50-54, the claims are interpreted and rejected for the same reasons and rationale as is mentioned in the rejection of claims 21-25 above.

For claim 55-63, the claims are interpreted and rejected for the same reasons and rationale as is mentioned in the rejection of claims 26-34 above.

For claim 64, the method for detecting and reporting a state of an aircraft taught by **Hennings** includes the following claimed steps, as noted, 1) the claimed monitoring one or more flight characteristics as well as 2) assessing one or more flight characteristics of the aircraft is achieved using the Active Network Guidance and Emergency Logic (ANGEL) that interacts with the aircraft and collects and returns data continuously (Col. 4, Lns. 27-34), 3) the claimed comparing the flight characteristics to one or more normal flight characteristics is also achieved by ANGEL (Col. 4, Lns. 55-61) wherein the data is compared to acceptable limits to determine whether flight conditions are within normal ranges, and 4) the claimed reporting the alert condition of

the aircraft is achieved using the displays on the aircraft or audible alerts in the sound system (Col. 4, Lns. 44-48). The reference does not; however, discuss assessing the normal flight characteristics based on a flight phase of the aircraft.

The claim is interpreted and rejected for the same reasons and rationale as is mentioned in the rejection of claims 21-25 above.

For claim 65, the Hennings reference establishes a number of alert levels (Normal, Moderate, Severe) based on the flight characteristics.

For claim 66, the alert condition of Hennings can be changed between alert levels depending upon threat level.

For claim 67, the Hennings reference uses several on-board systems to alert the pilot of an abnormal flight characteristic.

For claim 68, the alert condition may be increased to a more severe level (Moderate to Severe, '1' to '2') if the flight characteristic deviate from a predetermined value.

For claim 69, the alert condition may be increased to a predetermined threat level when the characteristics deviate from a predetermined value.

For claim 70, the Hennings reference details specific conditions that trigger the preselected threat levels when normal flight characteristics have been deviated from.

For claim 71, the Hennings reference details at least two levels (Moderate, Severe) that the alert condition may achieve depending upon the level of deviation from normal flight characteristics.

For claims 72 and 73, the alert conditions may be provided to the pilot on a display, either on the console or in a helmet-mounted display.

For claim 83, the Hennings reference (Col. 6, Lns. 7-11) states that the parameters and definitions can be adjusted and/or updated according to the requirements of the mission, the vehicle, or the controller.

For claims 84-87, the claims are interpreted and rejected for the same reasons and rationale as is mentioned in the rejection of claims 21-25 above.

For claims 88-96, the claims are interpreted and rejected for the same reasons and rationale as is mentioned in the rejection of claims 26-34 above.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kennedy, Jr. et al [U.S. 5,382,954] displays a resolution signal from a TCAS.

Ishihara et al [U.S. 6,707,394] provides an apparatus for generating terrain clearance floor envelopes.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John A. Tweel, Jr. whose telephone number is 571 272 2969. The examiner can normally be reached on M-F 10-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jeff Hofsass can be reached on 571 272 2981. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JAT
8/31/06

JOHN TWEEL
PRIMARY EXAMINER